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ORIGINAL ARTICLE

M. P. FitzGerald · R. Kotarinos

Rehabilitation of the short pelvic floor. I: Background and patient evaluation

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Abstract Pelvic floor physical therapists have traditionally focused on rehabilitation of the weak pelvic floor of normal length. With the recognition that many urogynecologic symptoms arise from the presence of a short, painful pelvic floor, the role of the physical therapist is expanding. Clinically, the pelvic floor musculature is found to be short, tender, and therefore weak. There are associated trigger points and characteristic extrapelvic connective tissue abnormalities. We report the characteristic patterns of myofascial and connective tissue abnormalities in 49 patients presenting with this syndrome.

Keywords Pain · Pelvic floor · Physical therapy · Rehabilitation

Abbreviations *PFM* Pelvic floor muscles · *TP* Trigger point · *IC* Interstitial cystitis · *LUT* Lower urinary tract · *UTI* Urinary tract infection · *SPF* Short pelvic floor · *CT* Connective tissue · *OI* Obturator internus

Introduction

A link between weak pelvic floor muscles (PFM) and urinary or fecal incontinence has been recognized for several decades. Traditional pelvic floor physical therapy has been directed at strengthening those PFM that are weak and of normal or increased length. Such therapy has consistently been shown to be effective in treating urinary and fecal incontinence [1, 2, 3, 4, 5, 6, 7].

M. P. FitzGerald (✉) · R. Kotarinos
Division of Female Pelvic Medicine and Reconstructive Surgery, Loyola University Medical Center, 2160 South First Avenue, Maywood, IL 60152, USA
E-mail: mfitzg8@lumc.edu
Tel.: +1-708-2162170
Fax: +1-708-2162171

Recently, the pivotal role of the short, painful and/or hypertonic pelvic floor in the development of several life-altering, chronic genitourinary conditions has been recognized [8, 9]. With this recognition, gynecologists and urologists are increasingly coming to rely on physical therapists skilled in the rehabilitation of the short/painful pelvic floor as distinct from the atrophied pelvic floor of normal length. This review describes the clinical syndromes associated with shortened PFM, and the rehabilitation techniques we have found to be the most useful.

Musculoskeletal abnormalities as cause of painful pelvic syndromes

Syndromes broadly described as arising from tension myalgia of the pelvic floor [8, 10, 11] include piriformis syndrome, coccygodynia, levator ani spasm syndrome and proctalgia fugax. Affected patients experience a variety of symptoms, including pain in the coccygeal area and a heavy feeling in the rectal or vaginal area. Tenderness of the pelvic floor muscles is found on examination, and symptoms can be relieved by manual stretching of the muscles and techniques such as trigger point release [8, 11]. Studies also support abnormal conditions of the PFM and associated muscles as the probable etiologic site of pain among men with genitourinary pain (or 'prostatodynia') [12], women with vulvodynia [13, 14], patients with interstitial cystitis [15] and other hypertonic disorders of the pelvic floor [16]. The abdominal–pelvic pain syndrome has similarly been described [17] as a condition due to the presence of trigger points (TP) within the muscles of the abdominal wall and pelvic floor, with symptoms usually being relieved by injection of bupivacaine into the TP.

Several animal studies support these clinical observations. Jasmin and colleagues [18, 19] have published details of an elegant animal model of neurogenic cystitis. In that study, pseudorabies virus was injected into the abductor caudae dorsalis tail muscle of the rat.

Hemorrhagic changes in the bladder were noted, but no viral infection of the bladder itself. Denervation of the bladder prevented this cystitis, suggesting that it was neurogenic in nature. Apparently, bladder neurons were affected because they neighbor spinal cord neurons from the infected tail muscles ('bystander effect'). Other studies support the idea of a close link between the state of the viscera and connective tissue findings in characteristic regions of the body wall. For example, Wesselman [20] conducted an animal study to investigate the mechanisms of referred pain from uterine inflammation. Inflammation in the uterus in rats pretreated with Evans Blue dye resulted in dye extravasation in the skin over the abdomen, groin, lower back, thighs, perineum and proximal tail. Applying these models literally to the clinical situation, a link is suggested between conditions such as interstitial cystitis (IC) and myofascial abnormalities in tissues whose innervation is close to that of the bladder. The models also suggest that myofascial abnormalities in specific regions may arise from interstitial cystitis. This idea is compatible with our clinical experience. For example, we consistently find that patients who carry a diagnosis of IC have palpable abnormalities in tissues of the pelvic floor, abdominal wall and hip girdle. Further, resolution of these myofascial abnormalities is associated with resolution of bladder symptoms.

Implications of PFM trigger points for lower urinary tract physiology

Trigger points are exquisitely tender foci causing pain in distant reference pain zones specific for each TP [11]. The TP is termed active when the referred pain is present spontaneously. If referred pain is present only on pressure over the TP, on needle penetration of the TP or during muscle activity, then the TP is termed latent. Muscles containing TP are characteristically short and weak, demonstrating both early fatigue and delayed relaxation. Panniculosis is recognized as a sign associated with the presence of TP in underlying muscles [11] and refers to a thickening of the subcutaneous tissues with an increased consistency and resistance to skin rolling. The treatment of such soft tissue abnormalities in order to effect changes in the function of an organ is a concept routinely employed by practitioners of forms of connective tissue release, including begundewebmassage [21], by osteopathic physicians who deal with Chapman's reflexes [22], and by a multitude of therapists who practice manual medicine techniques. Localized subcutaneous connective tissue restrictions characteristically found among patients with pelvic and bladder complaints were described more than 100 years ago by Sir Henry Head [23].

Because the physiology of the lower urinary tract (LUT) and anorectum depends so highly on the proper function of the PFM [24], their shortness/weakness can have far greater implications for several physiological functions than, for example, muscle weakness in an extremity. Any muscle affected by TP is short, contracts weakly and relaxes slowly [11]. The levator ani muscle group affected by TP will be held short and will have limited ability to inhibit the detrusor during bladder filling; urinary urgency and frequency can result. Further voluntary contraction of the PFM occurs in an attempt to suppress urinary urgency [25], causing further pain in the abnormal PFM. Similarly, a short and weak levator ani will make less than the required contribution to urethral closure during a cough, and stress incontinence can result. When the fatigued levator ani with TP is called upon to relax to allow voiding or defecation, relaxation can be delayed and urinary voiding dysfunction and/or constipation result. Furthermore, the presence of abnormalities such as TP within the muscles of the pelvic floor, hip girdle and abdominal wall itself produces symptoms, ranging from a feeling of vague suprapubic or pelvic discomfort to frank pain in these regions. As the pelvic floor is called into play during bladder filling and attempts to suppress an urge to void, TP in these muscles can become more and more symptomatic.

The importance of TP in this setting is emphasized when the presence of PFM and abdominal wall muscle coactivation is considered [26, 27]. This cocontraction is thought to be necessary for stabilization of the spine and trunk. For example, during a cough the pelvic floor muscles contract and abdominal wall muscle cocontraction is necessary to prevent significant ventral propulsion of the abdominal viscera. Similarly, when the abdominal wall muscles brace in order to facilitate lifting, pelvic floor contraction is then necessary to prevent caudad propulsion of the pelvic viscera. Although coactivation of the abdominal and pelvic muscles is usually advantageous, abnormally overactive or irritated abdominal wall musculature can provoke chronically active PFM. This phenomenon is clinically relevant when abdominal wall muscles contain active TP, or when the abdominal wall contains a painful scar. For example, we have noticed a strong association between the presence of tender infraumbilical and/or suprapubic laparoscopy scars and symptoms of troublesome urinary urgency, frequency, bladder pain and/or urinary urge incontinence. We also suspect this connection may explain the development of new-onset urinary urgency and frequency after some transabdominal surgical procedures.

Model of pelvic dysfunction secondary to abnormal PFM

The above model of painful pelvic and bladder syndromes implicates two pathophysiological loops which must be addressed in order to resolve the clinical problem. The insulting factor must be removed (treat the urinary tract infection (UTI), heal the episiotomy, stop the exercise which is overloading the pelvic floor), and the cycle of new dysfunction must be interrupted by seeking out and resolving any new myofascial and

connective tissue abnormalities. In patients with long-standing PFM disorders it may also be necessary to pharmacologically address the central pain pathways that have become sensitized [28].

Elements of patient history suggestive of short pelvic floor (SPF)

Symptoms of chronic pelvic pain and painful bladder and urethral syndromes are familiar to all practitioners in the field of female pelvic medicine. Elements of the patient history that raise the suspicion of PFM involvement include additional reports of a negative diagnostic laparoscopy, repeated treatment of culture-negative 'urinary tract infections', repeated treatment for 'yeast infections', exacerbation of symptoms by being seated for prolonged periods or by vaginal intercourse, and concurrent symptoms of urinary hesitancy or frank urinary retention [9].

Physical examination findings

Physical assessment of the patient presenting with a history suggesting that contributory myofascial and connective tissue abnormalities are present, requires attention to the following broad categories:

1. Standard extrapelvic musculoskeletal examination;
2. Connective tissue examination;
3. Pelvic floor muscle assessment;
4. Assessment of neurotension;
5. Vaginal pressure measurement/biofeedback.

Standard extrapelvic musculoskeletal evaluation

The standard musculoskeletal evaluation is common to the training of all physical therapists. Broadly, this includes (a) the use of pain-mapping diagrams with comments about the nature and severity of any pain; (b) observation of gait and posture, including at least a general assessment of the alignment of head, neck, shoulders and spine, and observation of the spine for scoliosis, excessive lordosis, sway back position; and observation for leg length differences or other anatomical asymmetries; (c) range of motion testing of trunk and hips; and (d) assessment of the motor strength of the lower extremities. Among patients presenting for pelvic floor rehabilitation, it is important to specifically evaluate the iliopsoas, the gluteal muscles, quadratus lumborum, obturator internus and piriformis for abnormalities. Abnormalities of these muscles and of the PFM frequently coexist.

Assessment of the abdominal wall for the presence of a significant diastasis recti is critically important. At rest, the muscle bellies of rectus abdominis, examined just above the umbilicus, should be no more than two finger breadths apart, and below the umbilicus should be no more than a few millimeters apart.

Connective tissue evaluation

The purpose of the connective tissue (CT) evaluation is to assess the consistency and mobility of different layers of CT. Similar to the recommendations of practitioners of begundewebmassage [21], we find that connective tissue characteristics are best assessed by methodically palpating the subcutaneous tissue of the abdominal wall, lower back, buttocks, vulva and thighs. As the skin is rolled between the examining fingers, the application of very small amounts of massage cream to the hands greatly facilitates this evaluation (and later treatment). Light touch and skin rolling can be applied in painful areas, or in the known areas of pain referral from the pelvis. Deep touch then delves into deeper layers of CT and shears between the layers. During palpation tissue abnormalities are sought, including alterations in tissue contour, temperature, elasticity, color, turgor and bulk. Typically during a CT assessment of healthy tissue the patient may complain of a cutting or scratching sensation. In tissues with significant restrictions, patients will complain of extremely sharp pain when the therapist is exerting minimal pressure. Others report the sensation that the therapist is pressing into a very bad bruise.

Among women with short pelvic floors, subcutaneous connective tissue abnormalities are common in the regions indicated in Fig. 1A, namely within a semicircular ('half-donut') distribution caudad to the umbilicus, along the midline between umbilicus and pubis, bilaterally about midway between umbilicus and pubis, and all along the inguinal ligaments and suprapubic regions. On examination of the low back and buttocks, CT abnormalities are found over the lumbosacral paravertebral muscles, over the sacrum and along the sacral edges. Clinically important abnormalities are also frequent in the tissues of the medial buttocks, accessible in both the prone and supine positions (Fig. 1B), where the tissue abnormality usually feels like a 'wad of chewing gum' and can be exquisitely tender to examination.

Further, non-muscular TP can often be identified in skin, scar tissue, fascia and ligaments [30] throughout the pelvic floor, just as throughout the rest of the body. It is an unfortunate coincidence that cutaneous reflex zones of the bladder and pelvic organs coincide with common sites of scars produced by laparoscopic and open surgical procedures. Perineal scars are usually due to episiotomies or pelvic reconstructive surgery, and are often observed in patients with reactive shortening of the pubovaginalis and levator ani. In our experience, treatment of perineal scars which are decades old can thus still contribute significantly to the relief of pain, dyspareunia, dysfunctional voiding and constipation. On vaginal examination they can be point-tender at rest, or only during traction posteriorly (frequently reproducing symptoms of dyspareunia). Their thickness is easily

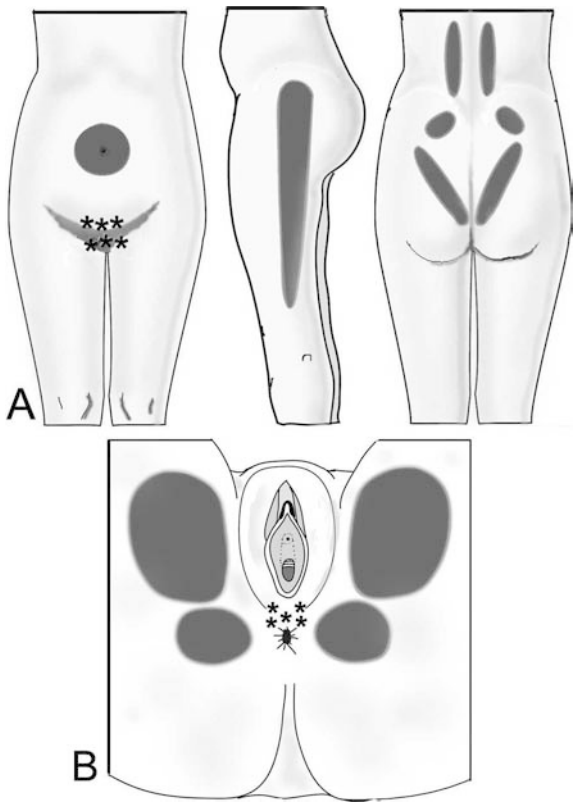

Fig. 1A, B Among women with short/painful pelvic floors, subcutaneous connective tissue abnormalities and trigger points (*) are common in the regions indicated. **A** Abdominal wall, thighs and low back. **B** Buttocks and perineum.

assessed by grasping the tissue between the vaginal opening and the ischial tuberosity between two fingers and rolling the tissue.

To clinically assess abdominal scars for their possible contribution to pelvic floor symptomatology, it is useful to simply observe the abdominal wall as the patient is asked to 'raise your shoulders off the bed' (contract rectus abdominis), to 'suck in your tummy' (contract transversus abdominis) and to cough. The tissues of the anterior abdominal wall should move in concert during all of these maneuvers. Scars that are causing troublesome symptoms often move paradoxically during observation and prompt further evaluation. All scars are then palpated and rolled with other abdominal wall CT (above the musculature). Ideally, scars should be fluid and move freely with other subcutaneous tissues. The scars are also elevated between examining fingers away from the abdominal wall and the patient asked about any pain or urinary urgency produced by this movement. Regions where two abdominal wall scars cross are commonly active sites.

Pelvic floor muscle assessment

After completing a generalized musculoskeletal and connective tissue examination, specific pelvic muscle assessment follows. Physical evaluation techniques that apply to the treatment of muscle dysfunction elsewhere in the body also apply to the muscles of the pelvic floor, hip girdle and trunk. Access to the PFM is obviously unique because of the transvaginal or transrectal route required.

Before placing any examining fingers into the vagina, it is useful to simply observe the external genitalia while asking the patient to bear down (Valsalva) and then to contract her pelvic floor ('please try to squeeze your vagina closed'). There may be minimal or absent movement of the external genitalia and perineal body during these maneuvers. It is also not uncommon to see initial movement (especially with a request to 'bear down') followed by the observation of perineal quivering as the PFM resist further elongation. The observation of slight or absent PFM movement at this stage should warn the examiner to proceed very gently with the rest of the pelvic examination, as tenderness on examination is likely to be at least moderately severe. If the pelvic floor is successfully elevated during a contraction, it is observed during relaxation. Similar to muscles elsewhere, PFM containing TP demonstrate slow relaxation.

Some apprehension on the part of the patient is normal during any pelvic examination. Often this causes an initial tightening of the pubovaginalis muscles and can make the introduction of one or two gloved and lubricated fingers into the vagina slightly difficult. Once their confidence is gained, most women are able to relax and tolerate a supine examination of the pelvic floor without difficulty. The nulliparous pelvic floor is usually relatively bulky but distinctly concave to examination by gentle inferior pressure from the vaginal examining finger(s). During digital examination of the normal PFM the patient will report a feeling of 'pressure'. However, the examination should not produce pain. We ask that patients report to us immediately if the methodical palpation of any PFM produces any sensation other than the characteristic pressure. We also ask that they rate that pain on a scale from 0 (no pain) to 10 (excruciatingly painful).

To assess the character of the PFM the examiner's fingers are brought laterally from the posterior midline to the lateral pelvic side walls, thereby palpating along the course of the iliococcygeus muscles. At the attachment of the bowl-like pelvic floor to the side wall of the pelvis it is easy to palpate the string-like presence of the arcus tendineus as it courses from the ischial spine anteriorly to reach the pubic bone. Pubovaginalis musculature is then palpated by withdrawing the examining fingers to the vaginal opening. When the examining fingers are directed posteriorly towards the posterior bony pelvis, coccygeus (small) and piriformis muscles are traversed. The obturator internus (OI) muscle is localized laterally by having the patient abduct the knee against resistance, with the hip in flexion (isometric contraction). Following the OI muscle belly posteriorly until it is no longer palpable brings the examining finger to the ischial spine. Moving the examining finger ante-

roinferiorly allows palpation over the course of the pudendal nerve in Alcock's canal, inferior to the arcus tendineus fascia pelvis.

Finally, when the patient is asked to contract her pelvic floor 'as if you are trying to squeeze my fingers', the normal pelvic floor contracts quickly and smoothly, and the contraction can be maintained for at least several seconds. When the patient is asked to stop contracting the pelvic floor the musculature should relax and drop quickly and smoothly.

When the pelvic floor is short and tight the genital hiatus is often small at rest. The short pelvic floor can also be immediately revealed by difficulty in admitting one or two gloved and lubricated examining fingers into the vagina. Not uncommonly, the perineal body is held so close to the posterior border of the pubic bone that considerable pressure applied posteriorly, is required to admit two fingers, even with full efforts at cooperation by the patient. Once one or two fingers are placed into the vagina, the walls of the pelvic floor are then systematically palpated, usually from posterior to anterior. The examining finger is seeking out taut bands and scar tissue, and assessing the mobility of the vagina on the underlying pelvic floor. When the pelvic floor is short, the PFM do not respond to intravaginal pressure by relaxing into a bowl-like configuration. Rather, they form bulky, firm 'shelves' of muscle, usually with multiple 'violin strings' or bands containing TP. Pressure into these bands is usually painful, and the pain often radiates into the lower abdominal or hip regions. Figure 2 illustrates common sites of TP within the muscles of the pelvic floor.

Following observation and palpation of the PFM, motor assessment of the pelvic floor begins with a request that the patient contract her pelvic muscles around the examining fingers. During this concentric contraction, side-to-side differences in the ability to contract may found. Many patients have some difficulty in performing an isolated pelvic floor contraction on request. The short pelvic floor contracts weakly because it is short and often painful. Very frequently, a request to contract the PFM is followed by a flicker of movement by the PFM, with moderate thigh adduction and hip extension (use of the accessory muscles of the pelvic floor). Equally often, a request to contract the PFM produces instead a strong Valsalva maneuver by the patient, who is completely unable to localize the musculature involved. Finally, in many patients no PFM activity is detectable. We have noticed that patients with a short pelvic floor will frequently need to concentrate intensely in order to contract it, and will often move their bodies up the examining table while elevating their ribcage during the attempt to contract. They may also contract their buttocks and thigh adductors, similar to patients with the more commonly found weak pelvic floor of normal or increased length. The examiner can broadly rate the strength of any PFM contraction as either weak or strong. Further categorization has not proved useful in our experience.

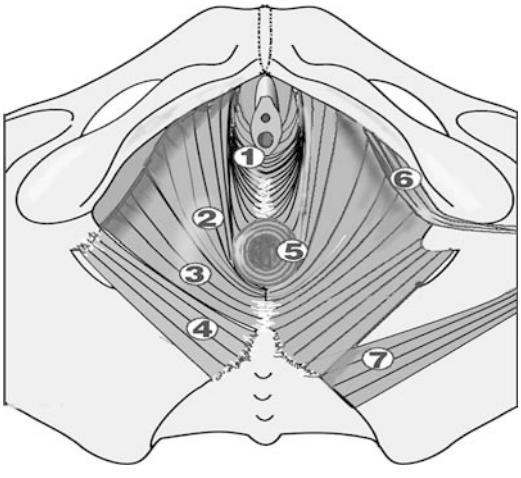

Fig. 2 Common sites of trigger points in the pelvic floor. (*1*) Pubovaginalis, (*2*) puborectalis, (*3*) iliococcygeus, (*4*) coccygeus, (*5*) anal sphincter, (*6*) obturator internus, (*7*) piriformis. Adapted from: Travell J, Simons D (1992) The trigger point manual. Vol. 2. Williams & Wilkins, Baltimore

Having assessed the ability to contract the PFM, the examiner then assesses the ability of the PFM to relax. In women with short pelvic floors the return to the relaxed state can be slow. Furthermore, patients are often unable to sense the relaxation of the muscle, in contrast to women who have a pelvic floor of a more normal length.

Lengthening of the PFM is assessed by asking the patient to 'drop your pelvic floor' or 'do what you do to start urinating'. It can be helpful to let the patient know that this may be difficult because they are supine and being asked to perform an activity not usually done in that position. If the patient is unable to drop their pelvic floor in this fashion, the ability of the PFM to elongate further may be assessed by having the patient bear down ('try to push my fingers out of the vagina').

Muscular examination is not complete until abdominal wall, obturator internus, quadratus lumborum, piriformis and the gluteal muscles have all been assessed for the presence of restrictions and TP. Such abnormalities frequently contribute to symptoms of pelvic/abdominal pain, urinary urgency and frequency.

Assessment of neurotension

Among a minority of patients with painful pelvic and bladder symptoms, the primary problem is apparently not myofascial, but rather arises from so-called adverse neural tension. Adverse neural tension is placed upon any nerve when local factors prevent its stretching in the normal fashion during body movements [29]. Testing for adverse neural tension upon the sciatic nerve is performed with the patient in the supine position. The hip is passively placed in flexion, abduction and internal rotation. The knee is then extended to place stretch upon the sciatic nerve and the patient is asked to bear down.

Pain is produced by these maneuvers if the nerve is irritable. This examination is commonly revealing when patients complain of an increase in their pelvic pain with the initiation of a bowel movement.

The pudendal nerve is similarly assessed, with the patient in a prone position. The knee is placed in flexion. The pudendal nerve is palpated over its course in Alcock's canal anteroinferior to the ischial spine. Pressure is placed anteriorly, and the leg is moved so that shear is placed upon obturator internus. Anteroposterior mobilization of tissues overlying the pudendal nerve at the ischial spine should not be particularly uncomfortable. Patients with restrictive processes in this area find tissue mobilization extremely uncomfortable, and describe sensations including lightning bolts, needles, knives or bee stings. In patients with the symptom of clitoral discomfort, moving the examining finger anteriorly along the medial pubic ramus can elicit irritability of the dorsal nerve to the clitoris.

Vaginal pressure measurement/biofeedback

A measure of PFM mobility and strength is obtained by measuring intravaginal pressure during PFM contractions. A pressure probe (for example, by InCare Medical Products, Hollister Inc, Libertyville, IL) is placed in the vagina and the patient asked to perform a series of quick contractions of the PFM ('squeeze and release'). Simple measurement of intravaginal pressure can be misleading because an increase in intravaginal pressure can be entirely due to an increase in intra-abdominal pressure, and can take place without any PFM contraction. Therefore vaginal pressure measurements can only be utilized to assess pelvic floor function if a simultaneous inward movement of an intravaginal balloon catheter is felt while a hand is in contact with the vaginal probe [32].

If the patient just has a weak pelvic floor of normal length, the pressures generated increase gradually as the patient learns how to maximally contract and release, then decrease gradually as the PFM fatigue (Fig. 3A). The profile of the contractions is similar to a 'bell curve'. The patient with a short pelvic floor will frequently demonstrate their peak pressures with their first and second contractions, and then gradually decrease over the course of six or seven contractions (Fig. 3B). The patient is then asked to contract the PFM and hold the contraction for up to 10 s. Usually they will fatigue well before the end of the 10-s time frame, and their second 10-s time frame is usually much weaker than the first.

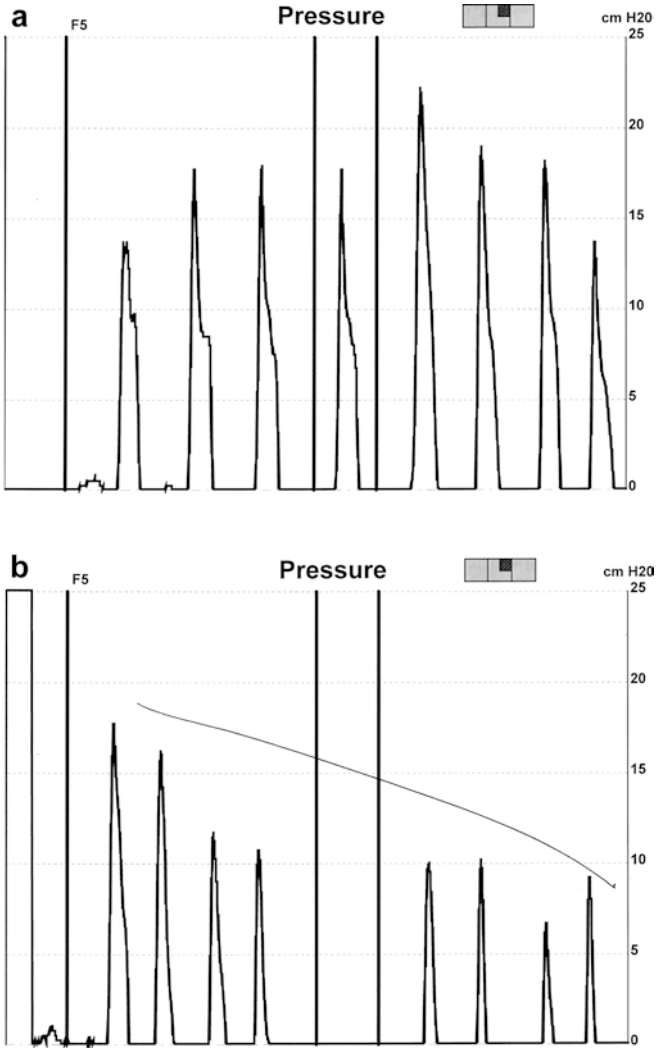

Fig. 3a, b Vaginal pressure profiles during pelvic floor muscle contraction. **a** When the pelvic floor is of normal length, there is a bell-shaped curve with initial improvement in pressures before muscle fatigue begins. **b** When the pelvic floor is short, a declining vaginal pressure profile is found

Patterns of myofascial abnormalities among women with urinary urgency/frequency and bladder or pelvic pain

In order to describe the patterns of their myofascial abnormality, we reviewed the charts of 49 women with symptoms of urinary urgency/frequency and/or pelvic or bladder pain referred for pelvic floor physical therapy evaluation and treatment. As patients were referred from several sources, no information about prior evaluations and testing was available. The subjects were 45 (92%) Caucasian, 3 (6%) African-American and 1 (2%) Hispanic. Median age was 37 (range 16–67) and median vaginal parity was 1 (range 0–5).

Table 1 summarizes relevant past medical history and presenting symptoms. Notably, 15 (31%) patients carried a diagnosis of interstitial cystitis at the time of presentation. Table 2 describes physical findings after the standardized examination described above. Most common findings were panniculosis of the abdomen in 40 (82%) patients, levator ani TP in 45 (92%) and suprapubic TP in 32 (65%). χ^2tests of association revealed no significant association between any one

Table 1 Relevant past medical history and presenting symptoms in 49 women referred for pelvic floor physical therapy evaluation

Past medical history	No. (%)
Recurrent UTI	13 (26)
Prior laparoscopy	13 (26)
Prior hysterectomy	8 (16)
Prior hydrodistension	6 (12)
Prior urethral dilation	3 (6)
Endometriosis	5 (10)
Interstitial cystitis	15 (31)
Incontinence surgery	4 (8)
Presenting symptoms	
Pelvic/abdominal pain	32 (65)
Dyspareunia	28 (57)
Stress incontinence	13 (26)
Urinary urgency	28 (57)
Urinary frequency	39 (80)
Urge incontinence	12 (24)
Nocturia	25 (51)
Urinary hesitancy/voiding difficulty	17 (35)
Constipation	10 (20)
Urinary symptoms exacerbated by vaginal coitus	12 (24)
Urinary symptoms exacerbated by sitting	9 (18)

Table 2 Myofascial abnormalities found on examination of 49 women referred for pelvic floor physical therapy evaluation

Physical findings	No. (%)
Scoliosis	7 (14)
Panniculosis: abdomen	40 (82)
Back (lumbosacral)	25 (51)
Tthighs	29 (59)
Abnormal perineal tissues	29 (59)
Trigger points: suprapubic	32 (65)
Levator ani	45 (92)
iliopsoas	21 (43)
Piriformis	4(8)
Obturator internus	22 (45)
Diastasis recti present	19 (39)
Internal rotation hip restricted	14 (29)
Internal rotation hip excessive	2 (4)
External rotation hip restricted	5 (10)
External rotation hip excessive	5 (10)
Adverse neural tension pudendal nerve	9 (16)

physical finding and any single presenting symptom. Clinical research concerning the effectiveness of rehabilitation of such patients is currently ongoing.

Conclusion

Rehabilitation of the pelvic floor can involve more than the strengthening of atrophic pelvic floor musculature of normal length. Different techniques are required to restore the short and/or painful pelvic floor to full function. The diversity of presenting symptoms and physical findings among these patients with complex pelvic floor disorders emphasizes that a flexible, multimodal approach is needed to address these complaints. Our companion paper describes our approach to the rehabilitation of the short pelvic floor.

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